Safety, Health, and Environmental Considerations in Research

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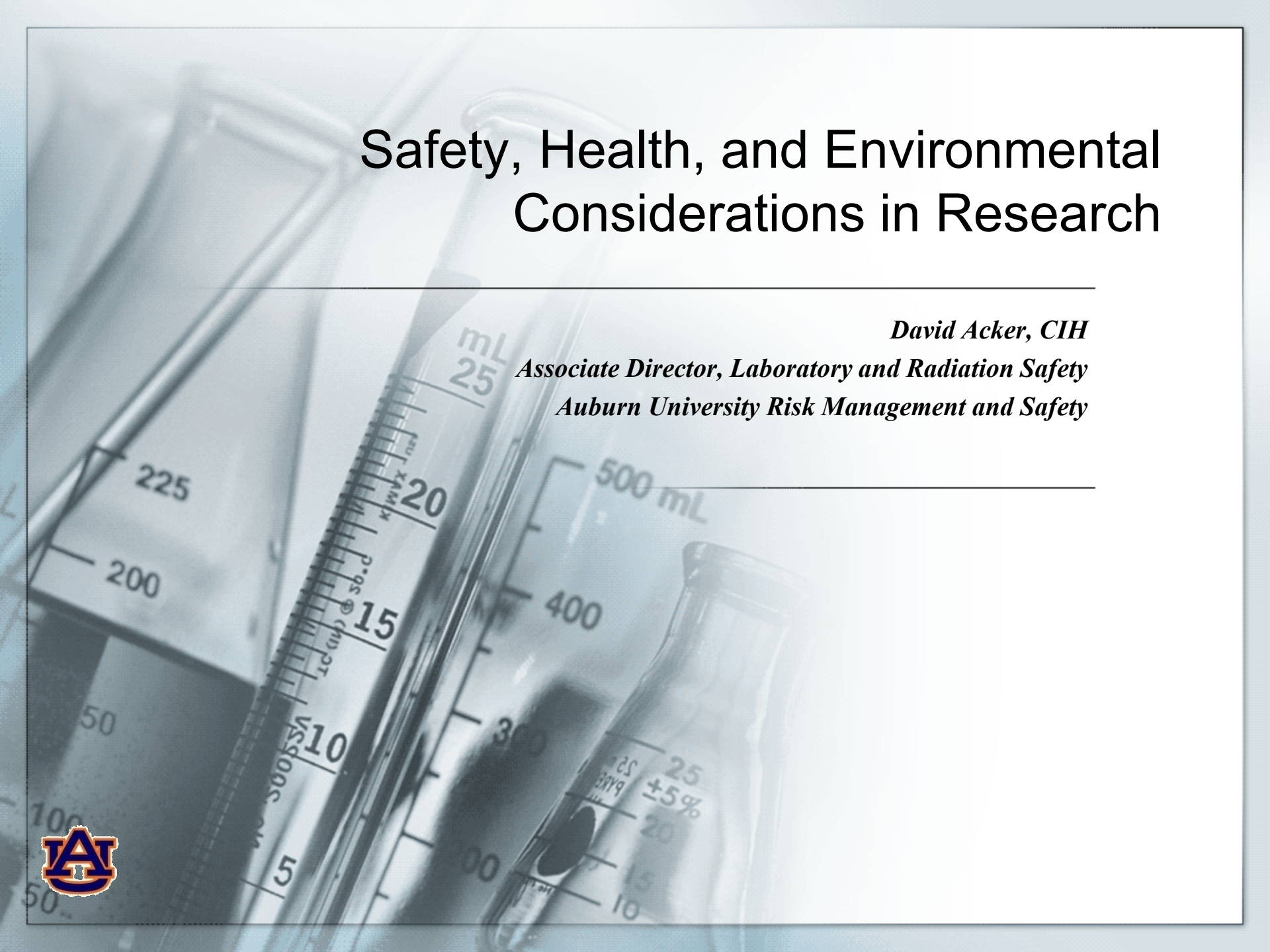
Auburn University Risk Management and Safety



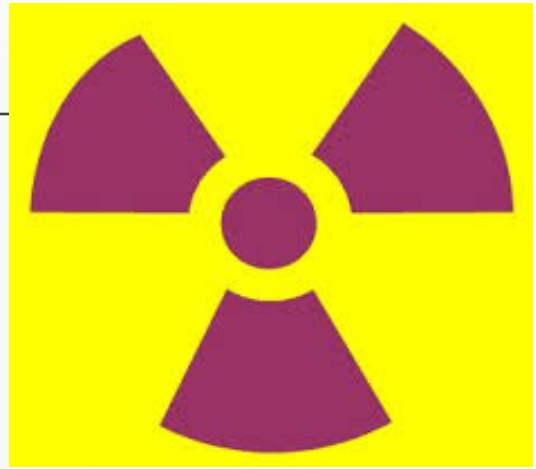
Risk Management and Safety

- Reports to Chief Operating Officer
- Three Divisions
  - Laboratory and Radiation Safety
  - Environmental Health and Safety
  - Risk Management and Insurance
- Consultation, compliance assistance, education and training
  - Membership on IACUC, IBC, IRB

Research Safety, Health, and Environmental Considerations

Biological Safety

Chemical Safety



Radiological Safety

Biological Safety

- Infectious Agents, Biological Toxins, Recombinant DNA
  - Infectious Agents – Bacteria, viruses, fungi, parasites, protozoa, prions that can cause disease in humans, animals, or plants.
    - Bacteria - e. coli, salmonella, campylobacter sp.
    - Viruses - BVDV, adenoviruses
    - Parasites - dirofilaria immitis
  - rDNA – a piece of DNA that has been created by combining other strands
    - Viral vectors
    - Gene editing techniques (CRISPR)
  - Biological toxins – toxic substance created by a living organism
    - botulism toxin

Biological Safety

- Requirements
  - IBC review and approval
  - Preempts IRB and IACUC approval
  - IBC/IRB Overlap
    - Blood, urine, saliva, muscle biopsy
  - IBC/IACUC Overlap
    - Infectious bacteria and viruses, parasites, rDNA
  - Biological safety program: https://cws.auburn.edu/OVPR/pm/compliance/ibc/home
    - Abbie Beatty, Biological Safety Officer: 750-8040

Radiation Safety

- Radioactive Materials (RAM), X-Rays, Lasers
  - Radioactive materials – cesium137, radioactive iodine, polonium
    - Must be approved by Radiation Safety Committee
    - Researchers must be Authorized Users - Alabama Department of Public Health (ADPH) license
  - x-ray devices – CT, iDXA, pQCT
    - X-ray safety training
    - ADPH shielding plan, registration
    - Approval of individual projects – human subjects research
  - Class 3b or 4 laser
    - Laser safety inventory, training, audits
  - Kara Beharry, Radiation Safety Officer: 750 - 9010

MRI Safety

- 7T Research Scans
  - Routine scans – standard or approved pulse sequences, commercially available coils
  - Non-routine scans – experimental scan sequences or coils
  - MRI Safety Advisory Council (MRISAC)
    - Approves non-routine scans
    - David Acker: 703-1471
    - Thomas Denney:

      (Director MRI Research Center) 844-6747

Chemical Safety

Los Angeles Times | ARTICLE COLLECTIONS

Deadly UCLA lab fire leaves haunting questions

March 01, 2009 | Kim Christensen

UCLA's Molecular Sciences Building was mostly closed for the holidays on Dec. 29 as research assistant Sheri Sangji worked on an organic chemistry experiment.

Only three months into her job in the lab, the 23-year-old Pomona College graduate was using a plastic syringe to extract from a sealed container a small quantity of t-butyl lithium -- a chemical compound that ignites instantly when exposed to air.

Sheri Sangji celebrates her graduation from Pomona

Colleagues Vow to Learn From Chemist's Death

By CAREY GOLDBERG
Published: October 3, 1997

HANOVER, N.H.— At 48, Karen Wetterhahn was a distinguished research chemist, a world expert on how heavy metals cause cancer, a sunny mother and wife, a tenured professor and a former dean at Dartmouth College. She was a happy, warm, lucky, busy person.

Then, in a venomous instant, her science turned against her. And now she is eulogized as a latter-day Madame Curie who perished in the pursuit of knowledge, much as Marie Curie died from exposure to radiation.

On Aug. 14, 1996, as Dr. Wetterhahn transferred an exceedingly rare form of mercury from one container to another, a drop or two of the dense liquid, looking something like light Karo syrup, fell onto her latex glove near her thumb. Knowing the dimethylmercury was toxic, she quickly cleaned it up, she later told colleagues.

What she did not know -- what apparently nobody knew -- was that dimethylmercury, which is not used for anything but uncommon research, was so soluble that it permeated the glove instantly and penetrated her skin.

The poison was so insidious that it would take five months until her gait would begin to falter and her words to slur. By then, by the time Dr. Wetterhahn connected that tiny

Chemical Safety

- Highly Hazardous Chemicals/Drugs
  - carcinogens, mutagens, teratogens highly toxic, neurotoxic
    - methylmercury, chemotherapy drugs, drugs that induce parkinsonian symptoms
  - Explosive/Reactive
    - ethylether, sodium azide, tert-butylithium, aluminum powder
  - Animal Research - IACUC
  - 3D Printing
  - Facilities/infrastructure issues
- Regulatory Compliance
  - Department of Homeland Security CFATS Standard
  - EPA (Hazardous Waste and Emergency Planning Regulations)
  - DEA – controlled substances

Hazardous Waste

- **Hazardous chemical wastes -** have the potential to cause harm to humans, animals or the environment, either by themselves or through interaction with other factors.
- **Regulated medical and/or biohazardous wastes -** have infectious characteristics that may either cause animal/human disease or harm to the environment
- **Dangerous goods** are items that may endanger the safety of an aircraft Dangerous goods are also known as restricted articles, hazardous materials and dangerous cargo.

- Tom Hodges: 703-7511

Animal Care Occupational Health and Safety Program (OHSP)

- Required by PHS Assurance, AAALAC.
- Anyone working with animals must be enrolled
- Medical surveillance, training, and other safety provisions
- OHS Program: https://cws.auburn.edu/OVPR/pm/compliance/iacuc/ohs
- Donna Tucker: 703-8186

Questions?